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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,528	07/28/2003	Deming Liu	P/4076-57	4308
2352	7590	05/13/2005	EXAMINER	
OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			MAI, NGOCLAN THI	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,528

Applicant(s)

LIU ET AL.

Examiner

Ngoclan T. Mai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-7, 9-16, 18 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 8, 17 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Upon further consideration, following is the rejection of the claims in view of Chung et al. (US 6,250,364 B1).
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 5-7, 9-16, 18, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukarami et al. in view of Bomford et al. and Chung et al.

Mukarami et al. disclose a process for making spent fuel storage member comprising ball milling a powder of aluminum and boron carbide in an argon atmosphere, molding the powder into a premolded body by cold isostatic pressing, canning the premolded body and sintering the canned premolded body. col. 1, line 55 to col. 2, line 5. Mukarami et al teach that canning step can be omitted and sintering is performed by hot pressing in vacuum. See to col. 2, lines 6-15.

The differences between Mukarami et al and claim 5 are that Mukarami et al teach adding surfactant such as ethanol or methanol to the vessel or balling-drum before ball-milling instead of during ball-milling and heating the compact billet and does not teach semisolid die-casting to form a near net shape composite component.

Bomford et al. also teach a method of making aluminum-ceramic composite by mechanically alloying where surfactant can be added directly into the mill with the charge powder particles and grinding media, before the milling operation is begun or it

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can be added periodically in the course of the mechanically alloying process. See col. 4, line 47 to col. 5, line 11.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add surfactant to powder charge taught by Mukarami et al during ball-milling instead of in the beginning since Bomford et al teach that either way would work. Determination of an optimum time, after adding surfactant to the ball-milled powder to further ball-milling would have been obvious.

Chung et al disclose it is known to form metal matrix composite such as ceramic reinforced aluminum metal matrix into near net shape article utilizing semi-solid die casting, col. 3, line 64 to col. 4, line 43. It would also be obvious to form the metal matrix composite taught by Mukarami et al into near net shape article, if one so desired, by employing semi-solid die casting technique as taught by Chung et al., since Chung et al teach that this can be done without subsequent step of forming or machining or employing complex presses, (col. 2, lines 28-39). While Chung et al do not specifically teach heat the compact billet to reach a 60-70% liquid phase content, Chung et al teach the composite is heated to temperature where the metal matrix starts to become liquid but still supports its own weight, col. 4, lines 30-31. Note that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147,

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14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). Furthermore, the specification contains no disclosure of either the critical nature of the claimed liquid phase range or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d, 1575, 1578, 16 USPQ2d, 1936 (Fed. Cir. 1990).

Regarding claim 6, Mukarami et al. teach that boron carbide is used in the mixed in the amount between 1.5 to 9 wt% and also teach aluminum oxide from ethyl alcohol or methyl alcohol can be present to improve the mechanical strength. Based on this teaching it would have been obvious to add more than 9 wt% of the reinforcing material.

With regard to claim 7, Mukarami et al teach using 450 kg of the ball to ball – milling 15 kg powder (ball to powder ratio is 30:1) with the milling time ranging from 1 to 10 hrs. Col. 8, lines 49-63.

With regard to claim 10, Mukarami et al. teaches hot pressing for 400-450 C for 30 sec under the pressure of 6,000 tons (~59 Mpa). See Col. 5, lines 50-56.

With regard to claim 11, Mukarami et al teaches this limitation in col. 6, line 58 to col. 7, line 1.

Regarding claim 14 the aluminum alloy taught by Mukarami et al in col. 4, lines 51-55 is a duralumin.

With regard to claims 15 and 20, Mukarami et al teaches the limitations in col. 10, line 5-20.

Regarding claim 16, Mukarami et al teaches the limitation in col. 8, lines 31-52.


Regarding claim 18, Mukarami et al teaches the limitation in col. 8, lines 55-57.

4. Claims 8, 17, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims..

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ngoclan T. Mai
Primary Examiner
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n.m.